



The Safety Corner

From the Marine Corps Center for Lessons Learned
January 19, 2007



Aerial Lifts and Fall Protection

This issue of the Safety Corner highlights lessons and observations about Aerial Lifts and Fall Protection Safety during operations in the War on Terror.

In this Issue:

[Welcome from the Director](#)

[Observations](#)

[Safety Tips](#)

From the Director:

The Marine Corps Center for Lessons Learned (MCCLL) strives to collect observations from units currently engaged in operations throughout the world. Although this issue was sparked by the lessons from a fatality aboard a naval station highlighted on page 2, I wanted to see what is happening to deployed units. The MCCLL Safety Liaison Officer worked with Capt Fleming, our MCCLL Liaison Officer with the MLG at Camp Taqaddum, on the topic of aerial lifts. It is reassuring to know that the equipment used by our Marines have safety devices that were not available on the lift involved in the mishap. Simple devices such as outriggers can add stability to a lift and might have prevented the fatality mentioned in this issue of the Safety Corner.

There is no doubt as to the exhausting amount of work our Marines and Sailors are doing in Iraq and Afghanistan. These young Marines and Sailors are working in conditions more difficult than what is encountered at a typical job site in the states. When considering the additional hazards in theater, it is a testimony to their proficiency and professionalism that they are able to safely accomplish the missions they are presented.

I want to thank 2ndLt Felts, SSgt Perez and the Marines of Marine Wing Support Squadron-373 for their help in the demonstration of aerial lift equipment at Camp Taqaddum. A "Bravo Zulu" to the Marine of MWSS-373 for not having any reportable mishaps while working with aerial lifts during their current deployment. Keep up the good work and remember to pass on the TPPs safety knowledge in order to keep future Marines safe.

I look forward to your comments, observations, and concerns.

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Aerial Lifts and Fall Protection

As bases grow and construction projects continue to improve facilities, the need for occupational safety increases. The Marine Corps Occupational Safety and Health Programs need to be implemented. These standards are designed to protect the lives of Marines and civilians who work for the Marine Corps. Programs including Fall Protection, Lockout/Tag Out, Electrical Safety, and Powered Industrial Trucks have set standards that have helped to save lives and preserve equipment.

Due to a recent fatality aboard a CONUS Naval base of a maintenance worker, the Marine Corps Center for Lessons Learned wanted to highlight some basic safety tips in working with aerial lifts and fall protection equipment. It is easy to become complacent during routine operations. Refresher training on safety practices and potential hazards are necessary to deter bad habits and to reinforce basic operating procedures.

The observations and recommendations contained in The Marine Corps Center for Lessons Learned (MCCLL) Safety Corner represent the considered judgment of Marines who have identified safety issues in their units. The purpose of this newsletter is to apprise other Marines of these safety recommendations and to encourage them to enter their own lessons into the Marine Corps Lessons Management System (LMS).



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Common lift accidents.

- Tip-overs due to not using or incorrect use of outriggers
- Overloading or Misapplication of the equipment
- Hitting obstacles on the ground or in the air such as beams or tree limbs
- Hitting electrical wires



Safe Work Practices

- Ensure that workers who operate aerial lifts are properly trained in the safe use of the equipment. Document all training and retrain on a regular basis.
- Maintain and operate elevating work platforms in accordance with the manufacturer's instructions.
- Never override hydraulic, mechanical, or electrical safety devices.
- Never move the equipment with workers in an elevated platform unless this is permitted by the manufacturer.
- Do not allow workers to position themselves between overhead hazards, such as joists and beams, and the rails of the basket. Movement of the lift could crush the workers.
- Maintain a minimum clearance of at least 10 feet, or 3 meters, away from the nearest overhead lines.
- Always treat power lines, wires and other conductors as energized, even if they are down or appear to be insulated.
- Use a body harness or restraining belt with a lanyard attached to the boom or basket to prevent workers from being ejected or pulled from the basket.
- Set the brakes, and use wheel chocks when on an incline.
- Use outriggers, if provided.
- Do not exceed the load limits of the equipment. Allow for the combined weight of the worker, tools, and materials.

Aerial Lifts in Taqaddum

This picture shows a Light Weight Rough Terrain 110 Air Mobile Crane, aka 7 ½ ton crane (LRT), with a basket attachment. The basket attachment has a max load of 600lbs, can accommodate two personnel, and can reach heights of up to 40 feet. The LRT is shown with the outriggers deployed and properly leveled.

Thanks to Capt Flemming (MCCLL LnO), 2ndLt Felts (Heavy Equipment Platoon Commander) and SSgt Perez (Chief) with MWSS-373 aboard Camp Taqaddum, for the information.

Photo by 2ndLt Felts, Camp Taqaddum, Iraq 18 Nov 2006.



Overtured Aerial Lift Fatality

The Naval Facilities Engineering Command (NAVFAC) reported a fatality of a contractor who was performing maintenance to the outside of a building. An employee was performing building exterior painting from an Aerial Lift. The lift overturned while the platform was at minimum telescopic extension, and in a nearly vertical position. As the equipment began to move forward, it flipped backwards. Indications are that the rotating structure was positioned perpendicular to the supporting (wheel) base structure. The worker was wearing Fall Protection PPE, however the employee fell or was ejected out of the basket striking a steel storage box and landing under the lift basket.

Article is from the Naval Safety Center





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Safety Tips

While we depend on forklifts to help us support missions, we must also use common (and safety) sense to protect us from mishaps and injuries. All Marines have a role in forklift safety. Remaining mishap-free demands a conscious daily effort on the part of everyone. Never attempt to operate an aerial lift unless you have been trained and authorized to do so.

Before Operating Aerial Lifts

- Check safety devices, operating controls before each use
- Check area in which aerial lift will be used for to ensure it is level and free of holes, drop-offs, bumps, and overhead obstructions and overhead power lines
- Set outriggers, brakes, wheel chocks

Preventing Electrocutions

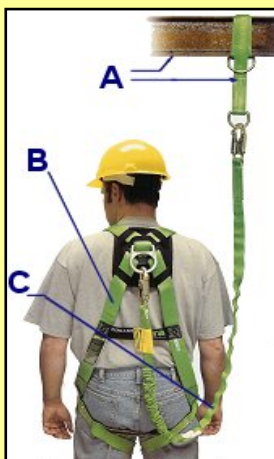
- Non-electrical workers must stay at least 10 feet away from overhead power lines
- Electrical workers must de-energize/insulate power lines or use proper PPE/equipment
- Use insulated buckets near overhead power lines
- Regularly check insulation on buckets

Preventing Tip-Overs

- Do not exceed manufacturer rated load capacity limits
- Do not travel to job location with lift in elevated position
- Set up proper work zone protection when working near traffic
- Do not raise platform on uneven or soft surfaces
- Do not raise platform in windy or gusty conditions
- Avoid excessive horizontal forces when working on elevated scissor lifts

Check with your unit safety officer or installation safety office for training on proper use of aerial lifts and fall protection equipment.

MWSS-373 erecting a helicopter maintenance tent with an LRT and a basket attachment, Camp Taqaddum. Picture by 2ndLt Felts, MWSS-373 Heavy Equipment Platoon Commander.



Anchorage / Anchorage Connectors (A) :

Commonly referred to as a tie-off point (e.g. I-beam) Anchorage Connector: Use to join the connecting device to the anchorage (e.g. cross-arm strap)

Body Wear (B): The personal protective equipment worn by the worker (e.g. full-body harness)

Connecting Devices (C): The critical link which joins the Body Wear to the Anchorage / Anchorage Connector (e.g. shock-absorbing lanyard or retractable lifeline)

IMPORTANT NOTE: ANY EQUIPMENT EXPOSED TO A FALL MUST BE TAKEN OUT OF SERVICE AND NOT USED AGAIN FOR FALL PROTECTION.

Fall Distance Calculation

When using a fall arrest system, the fall distance calculation must account for the length of lanyard, connecting hardware, deceleration distance, deployment of shock absorbers, the height of the person wearing the equipment (or the height of the D-ring attached to the back of the harness), one foot for slack in the harness, the position of the anchorage point, lanyard or rope elongation, and a safety factor. Depending on these variables, the minimum height required for a fall arrest system to be effective may be as much as 18 feet.

Any calculations performed in Fall Prevention Distances must be performed by a person trained in fall protection systems.